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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Inventors: Hirohiko Nishiki

Serial No.: ~~10929708~~

Filed: August 13, 2001

Title: STRUCTURES AND METHOD  
FOR SUPPORTING A  
FLEXIBLE SUBSTRATE

)  
) ATTORNEY FILE NO.:  
) SLA536  
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)  
) Examiner: Sefer, A.N.  
)  
) Customer No.: 27518  
)  
) Group Art: 2826  
)  
) Confirmation No.: 8902  
)

Commissioner for Patents  
P.O. Box 1450  
Alexandria VA, 22313-1450

RESPONSE TO A NOTIFICATION OF NON-COMPLIANT

APPEAL BRIEF UNDER 37 CFR 41.37

This paper is responsive to a Notification of Non-Compliant Appeal Brief under 37 CFR 41.37. Enclosed as part of the response are three copies of an amended Appeal Brief, intended to replace the original Appeal Brief received on October 12, 2004.

The Notification states that original Appeal Brief does not contain the items as required under 37 CFR 41.37(c). In response, the Applicant notes that the amended Appeal Brief contains all the items required under 37 CFR 41.37(c), with headings, and in the required order.

The Notification states that original Appeal Brief does not contain a statement of the status of all the claims. The amended Appeal Brief

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includes a section listing the status of the claims as required under 37 CFR 41.37(c)(1)(iii).

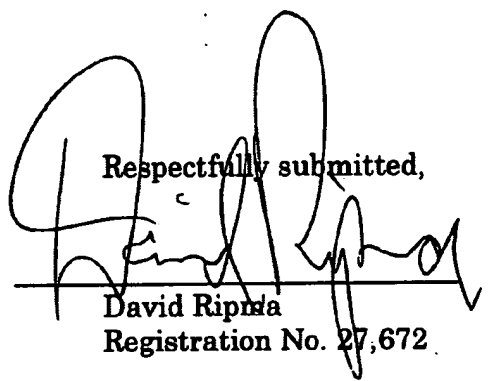
The Notification states that original Appeal Brief does not contain a concise statement of the claimed subject matter. The amended Appeal Brief includes a section compliant with 37 CFR 41.37(c)(1)(v).

The Notification states that original Appeal Brief does not contain a concise statement of each grounds of rejection. The amended Appeal Brief includes a section compliant with 37 CFR 41.37(c)(1)(vi).

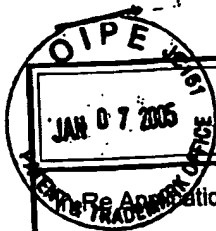
The Notification states that original Appeal Brief does not contain an argument under a separate heading for each grounds of rejection. The amended Appeal Brief includes a section compliant with 37 CFR 41.37(c)(1)(vii).

Date: 1/5/05

Respectfully submitted,

  
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David Ripma  
Registration No. 27,672

Customer Number 27518

**TRANSMITTAL OF APPEAL BRIEF (Large Entity)**Docket No.  
SLA0536

Re Application Of: Hirohiko Nishiki

Serial No.  
09/929,708Filing Date  
08/13/2001Examiner  
A. N. SeferGroup Art Unit  
2826

Invention: Structure and Method for Supporting a Flexible Substrate

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on

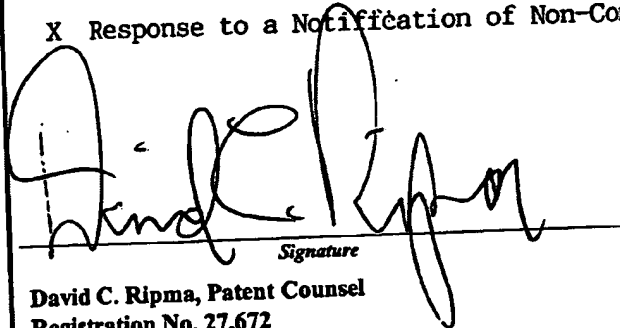
The fee for filing this Appeal Brief is: \$160.00

☐ A check in the amount of the fee is enclosed.

☐ The Commissioner has already been authorized to charge fees in this application to a Deposit Account. A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 19-1457  
A duplicate copy of this sheet is enclosed.

X Response to a Notification of Non-Compliant Appeal Brief under 37 CFR 41.37.

  
Signature

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Dated: January 5, 2005

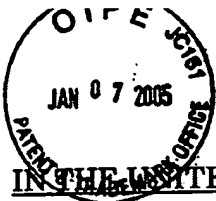
I certify that this document and fee is being deposited  
on January 5, 2005 with the U.S. Postal Service as  
first class mail under 37 C.F.R. 1.8 and is addressed to the  
Assistant Commissioner for Patents, Washington, D.C.  
20231.

  
Signature of Person Mailing Correspondence

David C. Ripma, Reg. #27,672

Typed or Printed Name of Person Mailing Correspondence

CC:



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re Application of:	)	
	)	ATTORNEY FILE NO.:
Inventors: Hirohiko Nishiki	)	SLA536
	)	
Serial No.: 10/929,708	)	
	)	Examiner: Sefer, A.N.
	)	
Filed: August 13, 2001	)	Customer No.: 27518
	)	
Title: STRUCTURES AND METHOD	)	Group Art: 2826
FOR SUPPORTING A	)	
FLEXIBLE SUBSTRATE	)	Confirmation No.: 8902
	)	

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Hon. Commissioner Of Patents And Trademarks  
Assistant Commissioner for Patents  
Alexandria VA, 22313-1450

Sir:

**BRIEF ON APPEAL**

This is an appeal from the rejection by Examiner Ahmed Sefer, Group Art Unit 2826, of claims 1-19 as set forth in the CLAIMS APPENDIX, all claims in the application.

### **REAL PARTY IN INTEREST**

The real party in interest is Sharp Laboratories of America, Inc., as assignee of the present application by an Assignment recorded in the United States Patent Office on August 13, 2001, at Reel 012084, Frame 0262.

### **RELATED APPEALS AND INTERFERENCES**

None.

### **STATUS OF THE CLAIMS**

Claims 20-31 have been withdrawn.

Claims 1-19 are in the application.

Claims 1-19 are rejected.

Claims 1-19 are appealed.

### **STATUS OF AMENDMENTS**

All claim amendments made prior to the Final Office Action of June 30, 2004 have been entered. No claim amendments have been filed subsequent to the Final Office Action.

### **SUMMARY OF CLAIMED SUBJECT MATTER**

The invention of claim 1 describes a method for attaching a flexible substrate to a rigid substrate. A flowchart of the process (Fig. 10) is described in the specification at page 12, beginning at line 22, and continuing through page 14, line 21. Step 1002 of the method forms a rigid support substrate with trenches. A flexible substrate is overlaid on the rigid substrate in Step 1004. In Step 1006, adhesive is injected into

the trenches. Step 1008 cures the adhesive, attaching the rigid substrate to the flexible substrate. Substrates attached as a result of the above-mentioned process are described at page 8, line 8, through page 9, line 5, see Fig. 2. Details of the process accompany the description of Figs. 9a and 9b, on page 11, line 25, through page 12, line 21.

The invention of claim 11 forms a pattern of spacers, with spacer channels, on a rigid substrate. A flowchart of the process (Fig. 11) is described in the specification at page 14, beginning at line 22, and continuing through page 16, line 9. Step 1102 forms a rigid substrate and Step 1104 introduces a pattern of spacers overlying the rigid substrate. In Step 1106, a flexible substrate is overlaid on the spacers. Step 1108 injects adhesive into spacer channels. Step 1110 cures the adhesive to attach the rigid substrate to the flexible substrate. Substrates attached as a result of the process are described at page 10, line 16, through page 11, line 3, see Fig. 6.

The adhesive bonds recited in claims 1 and 11 temporarily bind a rigid substrate to a flexible substrate, so that the flexible substrate can be manipulated in subsequent processes, which fabricate active circuitry on the flexible substrate. The bonds minimize the formation of air or water bubbles between substrates, whose expansion in the subsequent fabrication processes can destroy the integrity of circuitry formed on the flexible substrate. Typically, the rigid substrate is removed after the circuit fabrication processes are complete.

### **GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

1. Whether claims 1, 4, 11, and 14 fail to comply with the written description requirement under 35 U.S.C. 112, first paragraph.
2. Whether claims 1, 3, 8, and 9 are anticipated by Ge et al. (US Patent 5,892,558) under 35 U.S.C. 102(b).
3. Whether claims 1, 2, 5, and 6 are anticipated by Matsushita (US Patent 5,459,335) under 35 U.S.C. 102(b).
4. Whether claims 11, 12, 15, 16, and 18 are unpatentable under 35 U.S.C. 103(a) with respect to Matsushita, in view of Sundahl et al. (US Pub. 2002/0084536).
5. Whether claim 13 is unpatentable under 35 U.S.C. 103(a) with respect to Matsushita and Sundahl et al., in view of Tsubota et al. (US Patent 5,629,787).
6. Whether claim 19 is unpatentable under 35 U.S.C. 103(a) with respect to Matsushita and Sundahl et al., in view of Ge et al.
7. Whether claims 4, 7, 14, and 17 are unpatentable under 35 U.S.C. 103(a) with respect to Matsushita, in view of Pai et al (US Patent 6,612,888).
8. Whether claim 10 is unpatentable under 35 U.S.C. 103(a) with respect to Matsushita, in view of Matsui et al. (US Patent 6,191,007).

## **ARGUMENT**

### **1. The Rejection of Claims 1, 4, 11, and 14.**

#### **under 35 U.S.C. 112, first paragraph**

In Section 3 of the Final Office Action, mailed June 30, 2004, claims 11, 14, and 16 have been rejected under 35 U.S.C. 112, first paragraph, as failing the written description requirement. Specifically, the Office Action states that there is no support in the specification for the limitation of "in response to curing the adhesive".

The first paragraph of 35 U.S.C. 112 states that "(t)he specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and set forth the best mode contemplated by the inventor for carrying out his invention."

Claims 1 and 11 do not recite an adhesive compound invention, or a novel adhesive curing methodology. The invention does not recite a need for the use of a non-conventional adhesive. The invention relies upon a person skilled in the art to use a conventional adhesive in the manner proscribed by the adhesive's label, or in a manner that is well known in the art. Alternately stated, it would not take a skilled practitioner undue experimentation to use the invention if they followed the instructions that accompany a conventional adhesive, to cure that adhesive. The claimed invention does not change the conventional parameters associated with using an adhesive.



Claims 1 and 11 describe the steps of: curing the adhesive; and, in response to curing the adhesive, attaching the substrate. Support for claim 1 can be found in the specification at page 13, lines 7-9, where it states, "Step 1008 cures the adhesive to attach the first flexible substrate to the first support substrate." Support for claim 11 be found in the specification at page 15, lines 5-6, in the description of Step 1110.

The response sent to the Examiner on July 26, 2004, noted that in accordance with MPEP 2163.06, the Applicant had shown support in the specification for the rejected claims. The Applicant also noted that MPEP 2163 II A gave the Examiner the burden of explaining why a person skilled in the art would not recognize, in the disclosure, a description of the invention defined by the claims. However, the Advisory Action mailed by the Examiner on August 19, 2004 failed to provide any such proof. Rather than explain why a skilled practitioner would not recognize a description of the invention, the Advisory Action merely stated that the Applicant's arguments were "non-responsive".

The specification supports the claims, the use of adhesive is conventional, and the Examiner has failed to provide evidence to show why a person skilled in the art would not recognize the invention. Claims 4, dependent from claim 1, and claim 14, dependent from claim 11, enjoy the same support as the base claims.

## 2. The Rejection of Claims 1, 3, 8, and 9 under 35 U.S.C. 102(b)

In Section 10 of the Final Office Action claims 1, 3, 8, and 9 have been rejected under 35 U.S.C. 102(b) as being anticipated by Ge et al. ("Ge", US 5,892,558). The Office Action states that Ge discloses a rigid support substrate 34 made from glass or plastic, trenches 38/102 formed

in substrate 34, a flexible substrate 22, and adhesive injected into the trenches. The Office Action also states that claim 1 includes a recitation of its intended use, and that the claim should include structural differences from the prior art.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The Final Office Action references an obsolete (pre-amendment) version of the Applicant's claims. That is, the Final Office Action of June 30, 2004 repeats verbatim the rejection made in the Office Action dated March 17, 2004, even though the language of claim 1 was amended in the Office Action response dated April 4, 2004. The Applicant pointed out the above-mentioned discrepancies in the response received on July 26, 2004. However, the Advisory Action mailed on August 19 again failed to address this discrepancy.

The Examiner cites *In re Casey* and *In re Otto*, apparently to support the position that the recitation of an intended use of the claimed invention must result in a structural difference. In response, the Applicant notes that these cases are often used to support the position that the material worked upon by a device does not limit apparatus claims, see MPEP 2115. *In re Casey* involved an apparatus claim, and the court held that the manner in which the machine was used was not germane to the issue of patentability. *In re Otto* involved both an apparatus and a method claim. The method claim purported to be a method for making the apparatus. However, the steps of the method claim actually described the manner in which the apparatus was to be

used. The court found that these steps, of using the device, should not to be construed as a limitation in a claim for making the device. Copies of these cases are enclosed in the Evidence Appendix as Attachment G and H.

The Applicant is not entirely sure why the Examiner has presented these cases, as they do not seem directly relevant to proving anticipation with respect to Ge. The Applicant expressed this concern in the response to the Final Office Action. However, the Advisory Action did not address the issue. In rebuttal, the Applicant notes that the preamble of claim 1 describes "(a) method for mounting a flexible substrate...", with the step of "attaching the flexible substrate" being the final step in a method for mounting. Since "attaching" is the final step in a mounting process, it is clearly a relevant limitation. Alternately stated, the method of claim 1 does not recite the making of a support substrate as the end product apparatus. Rather, the end product is an assembly made up of a rigid substrate mounted to a flexible substrate. If the Examiner introduced these cases for the purpose of addressing the issue of whether there are structural differences between the claimed invention and Ge, the Applicant traverses this position as follows.

Ge describes a transparent faceplate 22 (col. 2, ln. 19-20) and a transparent substrate 34 with defined grooves 38 (col. 4, ln. 38-41). The groove 38 can be partially filled with adhesive 36 to secure a wire 11 (col. 6, ln. 48-50, see Figs. 5A-5C). Ge does not attach the faceplate to the substrate by filling the grooves with adhesive. Rather, all Ge's figures show that the adhesive is used only to secure the wire. That is, the adhesive attaches wire 11 to substrate 34. In fact, several layers of

material separate the wire (and adhesive) from substrate 22, as seen in Fig. 1B.

Ge does not describe the claimed invention step of "filling a trench with adhesive". None of Ge's figures show a trench filled with adhesive. Neither does Ge describe the step of "attaching the first flexible substrate to the first rigid support substrate." As noted above, several layers of material separate Ge rigid substrate 34 from flexible substrate 22. Ge does not describe all the limitations of the invention of claim 1, whether considered from the point of view as a process or a structure, and cannot anticipate. Claims 3, 8, and 9, dependent from claim 1 enjoy the same distinctions from the cited prior art.

3. The Rejection of Claims 1, 2, 5, and 6, under 35 U.S.C. 102(b)

Claims 1, 2, 5, and 6 have been rejected under 35 U.S.C. 102(b) as being anticipated by Matsushita et al. ("Matsushita", US 5,459,335). The Final Office Action states that Matsushita describes a rigid substrate 5 with trenches, and a process of filling the trenches with adhesive 4, to attach the rigid substrate to a flexible substrate. Again, the Final Office Action cites the *In re Casey* and *In re Otto* cases.

Matsushita actually describes a process that forms an insulating oxide layer 2 overlying a Si substrate 3. A thin-film semiconductor circuit 1 is then formed on oxide layer 2. After circuit fabrication, the circuit layer 1 and oxide layer 2 are separated from Si substrate 3. The thin-film circuit 1 is covered with an adhesive 4 and a support substrate 5 is attached to the adhesive-covered circuit layer 1 (col. 3, ln. 22-35). Matsushita does not describe a process of forming trenches and filling the trenches with adhesive. More particularly, Matsushita

does not describe a step of forming trenches in rigid support substrate 5. The Final Office Action, on page 9, second-last paragraph, even acknowledges that Matsushita does not describe the step of forming a support substrate with trenches.

In Section 4 of the Final Office Action, the Examiner states that, "the Examiner would like to reiterate that Matsushita does not disclose the step of forming a support substrate with trench as recited in claim 10." Since the Office Action acknowledges that Matsushita does not describe the more general case of "forming a support substrate with trenches", the Examiner cannot assert that Matsushita describes the more limiting case of "forming a rigid support substrate with trenches".

Since Matsushita does not describe the claimed invention steps of "forming a first rigid substrate with trenches" (as acknowledged in the Office Action), or "injecting adhesive into the trenches...", he does not describe all the limitations of the invention of claim 1. Claims 2, 5, and 6, dependent from claim 1 enjoy the same distinctions from the cited prior art.

4. The Rejection of Claims 11, 12, 15, 16, and 18,  
under 35 U.S.C. 103(a)

In Section 13 of the Final Office Action claims 11, 12, 15, 16, and 18 have been rejected under 35 U.S.C. 103(a) as unpatentable with respect to Matsushita in view of Sundahl et al. ("Sundahl", US Pub 2002/0084536). The Office Action acknowledges that Matsushita does not disclose a pattern of spacers, but states that Sundahl shows a preformed pattern of spacers 602. The Office Action states that it would have been obvious to one skilled in the art at the time of the invention to incorporate

Sundahl's teaching with Matsushita "since that would maintain mechanical integrity during the process of attaching the lower and upper panels as taught by Sundahl."

The Final Office Action also states that "(a)s for the purpose of curing the said adhesive (to attach the first flexible substrate to the first rigid support substrate) recited in the claims, it refers to a function", citing *In re Casey* and *In re Otto*. Again, the Final Office Action is making reference to an obsolete version of the claims. The claims were amended in the response of April 4, 2004 to recite the steps of: "curing the adhesive", and, "...attaching the first flexible substrate..." As noted above in Section 2 of the *Argument* Section, "attaching" is a valid limitation in a mounting process. Again, the Applicant is unsure of why this issue is addressed in the context of an obviousness rejection. If the issue has been presented to address structural difference, these differences are discussed below.

With respect to the obviousness rejection, an invention is unpatentable if the differences between it and the prior art would have been obvious at the time of the invention. As stated in MPEP § 2143, there are three requirements to establish a *prima facie* case of obviousness.

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and reasonable expectation of success must both be found in

the prior art and not based on applicant's disclosure. *In re Vaeck* 947 F.2d 488, 20 USPQ2d, 1438 (Fed. Cir. 1991).

Generally, Matsushita describes an LCD invention that addresses the problem of removing a thin film circuit layer/oxide layer stack from a single-crystal Si substrate, for attachment to a support substrate such as glass (col. 1, ln. 53-61). The focus of Matsushita's patent is on the detachment process. The claimed invention, as an alternative to this type of process, builds thin film circuits on a support substrate that is designed for easy detachment. After separation, Matsushita's thin film is reattached to a glass substrate. This process is described in a single short paragraph, merely stating that the faces are attached with adhesive, and hardened (col. 4, ln. 65 through col. 5, ln. 5).

Sundahl describes a process for making electrical connections between circuit boards. Conductive spacers 602 are formed on bond pads 504, see Fig. 6. The conductive spacers can be formed by a selective electroplating process, solder printing, welding, or by using a conductive adhesive (0042-0043). "Conductive material 702 is placed in proximity to areas where each of the spacers 602 will contact complementary sets of bond pads", see Fig. 7 (0044). The conductive material (solder) 702 is used (as an adhesive) to form a mechanical bond, between panels, see Fig. 9 (0048-0049). Generally, Sundahl is motivated to make electrical connections less prone to open circuit defects (0010).

With respect to the first *prima facie* requirement to support a case of obviousness, there appears to be no motivation to look to the Sundahl reference for a modification to Matsushita. Neither has the Examiner supplied any support for motivation. As noted in MPEP 2142,

The legal concept of *prima facie* obviousness is a procedural tool of examination which applies broadly to all arts. It allocates who has the burden of going forward with production of evidence in each step of the examination process. See *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Saunders*, 444 F.2d 599, 170 USPQ 213 (CCPA 1971); *In re Tiffin*, 443 F.2d 394, 170 USPQ 88 (CCPA 1971), *amended*, 448 F.2d 791, 171 USPQ 294 (CCPA 1971); *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

Here, the Examiner's *prima facie* case of obviousness is built upon that the statement that it would have been obvious for one skilled in the art at the time of the invention to incorporate Sundahl's teaching with Matsushita "since that would maintain mechanical integrity during the process of attaching the lower and upper panels as taught by Sundahl." Since the Office Action mentions Sundahl to introduce the subject matter of "spacers", the Applicant assumes that it is Sundahl's spacers that are suppose to maintain the mechanical integrity.

In rebuttal, the Applicant notes that Matsushita never discusses the issue of mechanical integrity. As mentioned above, his bonding process is described in a short paragraph, and clearly is not the focus of the invention. Further, Matsushita's support substrate is the final product glass substrate on which the active LCD circuitry (flexible substrate) is mounted. Clearly, no LCD manufacturer would put spacers between the LCD circuitry and the glass panel. For one reason, the spacers would block the LCD pixels (emitted light) from being seen through the glass substrate. For a second reason, a better *permanent*



bond can be made between a flexible and rigid substrate without intervening spacers. Also mentioned above, Sundahl's spacers are for the purpose of making an electrical interconnect, not a mechanically secure connection. A third reason is that there is no need to make electrical contacts to a glass substrate. In summary, it is difficult to imagine that a skilled artisan would seek to combine elements from these two references for any purpose. In the case of the claimed invention, there is no motivation to combine references for the purpose of making an adhesive-filled spacer channel between substrates.

Further, the Office Action has not demonstrated that the modification of the cited prior art references point to the reasonable expectation of success in the present invention, which is the second requirement of the obviousness analysis. Even if a skilled artisan were given the Sundahl and Matsushita references as a starting point, there is no expectation that the artisan would come up with a process that bonds a flexible substrate to a rigid substrate by placing spacers between the substrates, and filling the channels formed by the spacers with epoxy. Neither is there an expectation of a process that fills a channel, formed between spacers, with adhesive.

With respect to the third *prima facie* obviousness requirement, the references even when combined do not explicitly disclose or suggest all the elements of the claimed invention. Neither Matsushita nor Sundahl teach that adhesive can be injected in spacer channels, as recited in claim 11. Matsushita does not disclose spacers. Sundahl explicitly states that his conductive adhesive is formed in the proximity of the spacers (paragraph 0044, see Figs. 7 and 8), as opposed to in the channels between spacers. This is because the (conductive) adhesive, in

combination with the conductive spacer, forms part of the electrical interconnect. Since the combination of Matsushita and Sundahl neither explicitly describes all the limitation of claim 11, nor suggests a modification that makes claim 11 obvious, the Applicant requests that the rejection be removed. Claims 12, 15, 16, and 18 dependent from claim 11, enjoy the same distinctions.

**5. The Rejection of Claim 13 under 35 U.S.C. 103(a)**

The Final Office Action rejects claim 13 under 35 U.S.C. 103(a) as unpatentable over Matsushita in view of Sundahl, further in view of Tsubota et al. ("Tsubota"; US 5,629,787). The Office Action acknowledges that Matsushita and Sundahl do not describe the formation of TFTs and a color filter layer, but states that it would have been obvious to combine the TFTs and color filter disclosed by Tsubota, with Matsushita and Sundahl, to make an LCD with a high contrast.

As noted above, Matsushita addresses the problem of removing a thin film circuit layer/oxide layer stack from a single-crystal Si substrate, for attachment to a glass substrate. Sundahl addresses the problem of forming an electrical interface between circuit boards using conductive spacers.

Tsubota has been added to introduce elements of TFTs and a color filter. However, there is no motivation to combine Matsushita with Sundahl, and the Tsubota reference provides no further incentive to combine the Matsushita and Sundahl references. As noted above in Section 4 of the Applicant's *Argument*, there is no motivation to modify Matsushita's invention to add (Sundahl's) conductive spacers. The addition of TFT and color filter elements does not change this lack of

motivation (the first *prima facie* requirement). That is, the combination of a color filter and conductive spacers still provides no motivation to add spacers between Matsushita's flexible circuit active circuitry and the glass panel. As noted above, the spacers would block emitted light.

With respect to the second requirement of the obviousness analysis, even if Tsubota could be combined with Matsushita and Sundahl, there is no expectation from the combination that a flexible substrate can be bonded to a rigid substrate by placing spacers between the substrates, and filling the channels formed by the spacers with epoxy. Generally, none of the references address that same problem as the claimed invention; the temporary protection of a flexible substrate during fabrication. More specifically, the references do not create an expectation of a process that fills a channel, formed between spacers, with adhesive.

With respect to the third *prima facie* obviousness requirement, even when combined, the references do not disclose all the elements of the claimed invention. The combination of Tsubota, Matsushita, and Sundahl does not teach that adhesive can be injected in spacer channels, as recited in claim 11. Neither Tsubota nor Matsushita disclose spacers. Sundahl explicitly states that his conductive adhesive is formed in the proximity of the spacers, as opposed to in the channels between spacers. The combination of Tsubota, Matsushita, and Sundahl neither explicitly describes all the limitations of claim 11, nor suggests a modification that makes claim 11 obvious. Claim 13, dependent from claim 11 enjoys the same advantages.

**6. The Rejection of Claim 19 under 35 U.S.C. 103(a)**

In Section 15 of the Final Office Action, claim 19 has been rejected under 35 U.S.C. 103(a) as unpatentable over Matsushita in view of Sundahl, further in view of Ge. The Office Action acknowledges that Matsushita and Sundahl do not describe the metal film and plastic flexible substrates, but states that it would have been obvious to combine substrate materials disclosed by Ge, with Matsushita and Sundahl, to make claim 19 obvious, as Ge's teachings would enhance the aspect ratio.

As noted above, Matsushita addresses the problem of removing a thin film circuit layer/oxide layer stack from a single-crystal Si substrate, for attachment to a glass substrate. Sundahl addresses the problem of forming an electrical interface between circuit boards using conductive spacers.

Ge has been added to introduce plastic and metal film flexible substrates, and an improved aspect ratio. However, the Ge reference does not provide any further incentive to combine the Matsushita and Sundahl references. As noted above, there is no motivation to modify Matsushita's invention by adding conductive spacers. The addition of particular types of flexible substrates does not change this lack of motivation, which is the first *prima facie* requirement. The addition of an improved aspect ratio provides no additional motivation to interpose a conductive spacer between a glass substrate and a thin film circuit.

With respect to the second requirement of the obviousness analysis, even if Ge could be combined with Matsushita and Sundahl, there is no expectation from the combination that a flexible substrate can be bonded to a rigid substrate by placing spacers between the substrates,

and filling the channels formed by the spacers with epoxy. The references do not create an expectation in the claimed process that fills a channel, formed between spacers, with adhesive.

With respect to the third *prima facie* obviousness requirement, the references even when combined do not disclose all the elements of the claimed invention. The combination of Ge, Matsushita, and Sundahl does not teach that adhesive can be injected in spacer channels, as recited in claim 11. Neither Ge nor Matsushita disclose spacers. Sundahl explicitly states that his conductive adhesive is formed in the proximity of the spacers, as opposed to in the channels between spacers. The combination of Ge, Matsushita, and Sundahl neither explicitly describes all the limitations of claim 11, nor suggests a modification that makes claim 11 obvious. Claim 19, dependent from claim 11 enjoys the same advantages.

7. The Rejection of Claims 4, 7, 14, and 17 under 35 U.S.C. 103(a)

In Section 16 of the Final Office Action claims 4, 7, 14, and 17 have been rejected under 35 U.S.C. 103(a) as unpatentable with respect to Matsushita in view of Pai et al. ("Pai", US 6,612,888). The Office Action acknowledges that Matsushita does not specifically disclose the use of an N<sub>2</sub> atmosphere, but that Pai does, and that it would have been obvious at the time of the invention to incorporate Pai's process of eliminating air bubbles, with Matsushita.

Generally, Matsushita describes an LCD invention that addresses the problem of removing a thin film circuit layer/oxide layer stack from a single-crystal Si substrate, for attachment to a glass support substrate (col. 1, ln. 53-61).

Generally, Pai is concerned with providing an improved commercial package that seals an electro-luminescence (EL) device from moisture and oxygen (col. 2, ln. 51-62). Pai describes a process of sealing an electro-luminescence device 502 between two glass substrates; glass substrate 500 and glass plate 504. Initially, each EL device 502 is formed on glass substrate 500. Then, each EL device is partially surrounded by frame glue 508 and a spacer 510, and covered with glass plate 504 (col. 4, ln. 23-36). An opening 512 in the glue/spacer 508/510 permits a cavity 518 to be formed between glass layers 500/504. The glass substrate is cut, to separate the discrete luminescence devices from each other (col. 4, ln. 54-64). After pulling a vacuum, each package is inserted into a glue tub 522 and the cavity 518 is filled (col. 5, ln. 1-16).

With respect to the first *prima facie* requirement, there is no motivation to use Pai to modify the Matsushita reference in such a way as to make claimed invention obvious. Matsushita is attempting to solve the problem of detaching thin-film circuits from the substrates on which they fabricated, for attachment to a glass substrate. Pai, on the other hand, is solving the problem of forming a seal around an EL device. If the subject of Pai's patent concerned the seal *between* the EL device 502 and the glass substrate 500 (see Fig. 5A), there could conceivably be some crossover to Matsushita's glass substrate attachment process. However, Pai uses spacers to environmentally seal an EL device in a cavity between glass substrates 500 and 504 (see Fig. 5B). Alternately stated, Pai does not discuss the elimination of air bubbles in the seal between the EL device 502 and the glass substrate 500.

The Office Actions of March 17, 2003, and June 30, 2004, both state that "it would have been obvious ... to incorporate Pai teachings

since that would eliminate the formation of air bubbles which affect the performance of the device as taught by Pai.” However, since Matsushita does not address the issue of environmental sealing his final product, there appears to be no motivation for a skilled artisan to look to Pai to make modifications to Matsushita’s process. Alternately stated, since Pai does not describe a process of removing air bubbles between a device and an underlying glass substrate, there is no motivation to use Pai to make modifications to Matsushita’s substrate attachment method.

Further, the Office Action has not demonstrated that the modification of the cited the prior art references point to the reasonable expectation of success in the present invention, which is the second requirement of the obviousness analysis. Even if Pai could be combined with Matsushita, there is no expectation from the combination that a rigid substrate can be attached to a flexible substrate using adhesive-filled spacer channels, or adhesive-filled trenches in the rigid substrate.

With respect to the third requirement to support a *prima facie* case of obviousness, the combination of Pai with Matsushita does not describe all the limitations of the invention of claims 1 or 11. With respect to claim 1, neither reference discloses a rigid substrate with trenches, or adhesive injected into the trenches. With respect to claim 11, neither reference describes a flexible substrate that is formed overlying a pattern of spacers. Pai describes the attachment of two glass substrates. Matsushita cannot use spacers between his glass substrate and thin film circuit. Therefore, the combination of references neither explicitly describes the limitations of claims 1 and 11, nor suggests modifications that would make claims 1 and 11 obvious. Claims 4 and 7, dependent

from claim 1, and claims 14 and 17, dependent from claim 11, enjoy the same distinctions.

**8. The Rejection of Claim 10 under 35 U.S.C. 103(a)**

In Section 17 of the Final Office Action, claim 10 has been rejected under 35 U.S.C. 103(a) as unpatentable with respect to Matsushita in view of Matsui et al. ("Matsui", US 6,191,007). The Office Action acknowledges that Matsushita does not describe the step of forming a support substrate with trenches, but that Matsui shows trenches 821, and that it would have been obvious at the time of the invention to incorporate the teachings of Matsui into Matsushita, to increase uniformity.

Generally, Matsui is concerned with the fabrication of silicon-insulator (SOI) MOSFETS (col. 5, ln. 52-60). More particularly, Matsui describes a process of forming a silicon thin-film on an SOI substrate. In one embodiment (Fig. 107) a substrate is formed including Si substrate 802, oxide layer 803, poly-Si layer 804/oxide layer 805 stack formed with a trench 808, and a monocrystalline Si layer 807 overlying oxide layer 805 (col. 97, ln. 27 through col. 98, ln. 39). The end result is improved film thickness uniformity. The trench is formed for the purpose of forming a buried electrode (col. 1, ln. 59 through col. 2, ln. 24).

The Final Office Action of June 30, 2004 and the Office Action of March 17, 2004, both state that "it would have been obvious ... to incorporate Matsui's teaching since that would increase uniformity as taught by Matsui." In the *Response to Arguments* Section of the Final Office Action (Section 5), the Examiner states that support for a *prima*



*facie* case is based upon the contention that the prior art provides the same advantages cited by the Applicant.

In rebuttal, the Applicant notes that there is no motivation to combine the Matsui and Matsushita references, as they are solving different problems. As mentioned above, Matsushita is addressing a detachment problem, and mentions a simple attachment process in passing. Matsui is improving the uniformity of an attached monocrystalline Si layer. With respect to the base claim (claim 1), an expert would not be motivated to use Matsui to make modifications to either Matsushita's flexible substrate detachment or attachment process. Since there is no motivation to combine the references in such a way as to make to claim elements of claim 1 obvious, a discussion of uniformity is irrelevant. Further, claim 10 does not even describe substrate uniformity as a claim element.

With respect to the second *prima facie* obviousness requirement, even if the references could be combined, there is no suggestion in the combination of an invention that attaches a flexible substrate to a rigid substrate through the use of adhesive-filled spacer channels. The combination of references does not create an expectation of the claimed subject matter.

With respect to the third *prima facie* requirement, the combination of Matsushita and Matsui does not describe all the limitations of claim 1. Neither Matsui nor Matsushita disclose the limitations of forming a rigid substrate with trenches, filling the trench with adhesive, and attaching substrates. Claim 10, dependent from claim 1, enjoys the same distinctions from the cited prior art. The combination of Matsushita and Matsui neither explicitly describes the elements of

**claim 1, nor suggests modifications that make claim 1 obvious. Claim 10 enjoys the same advantages.**

### **SUMMARY AND CONCLUSION**

It is submitted that for the reasons pointed out above, the claims in the present application clearly and patentably distinguish over the cited references. Accordingly, the Examiner should be reversed and ordered to pass the case to issue.

A check in the amount of \$340.00 was previously enclosed to cover the fee for this Appeal Brief. Authorization is given to charge any deficit or credit any excess to Deposit Account No. 19-1457.

Respectfully submitted,

Date: \_\_\_\_\_

\_\_\_\_\_  
David Ripma  
Registration No. 27,672

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Customer Number 27518

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**CLAIMS  
APPENDIX**

## **IN THE CLAIMS:**

1. (Previously Presented) A method for mounting a flexible substrate during the fabrication of a liquid crystal display (LCD), the method comprising:

- forming a first rigid support substrate with trenches;
- forming a first flexible substrate overlying the first rigid support substrate;
- injecting adhesive into the trenches of the first rigid support substrate;
- curing the adhesive; and,
- in response to curing the adhesive, attaching the first flexible substrate to the first rigid support substrate.

2. (Previously Presented) The method of claim 1 further comprising:

- subsequent to additional LCD fabrication processes, detaching the first rigid support substrate and adhesive from the first flexible substrate.

3. (Original) The method of claim 1 further comprising:

- depositing a plurality of patterned integrated circuit films overlying the first flexible substrate, forming thin film transistors (TFTs);
- forming a liquid crystal (LC) layer overlying the TFTs; and,
- forming a color filter layer over the LC layer.

4. (Previously Presented) The method of claim 3 further comprising:

- forming a second flexible substrate overlying the color filter;
- forming a second rigid support substrate with trenches overlying the second flexible substrate;
- injecting adhesive into the trenches of the second rigid support substrate;
- curing the adhesive; and,
- in response to curing the adhesive, attaching the second flexible substrate to the second rigid support substrate.

5. (Previously Presented) The method of claim 1 wherein injecting adhesive into the trenches of the first rigid support substrate includes injecting the adhesive in a vacuum environment.

6. (Previously Presented) The method of claim 5 wherein forming a first rigid support substrate with trenches includes forming trenches with at least one trench mouth;

- wherein injecting adhesive into the trenches of the first support substrate includes:
  - creating a vacuum environment in the first rigid support substrate trenches;
  - supplying adhesive to the at least one mouth of the first rigid support substrate trenches;
  - in response to returning the first rigid support substrate to ambient pressure, pulling the adhesive into the first rigid support substrate trenches vacuum environment through the at least one mouth.

7. (Original) The method of claim 6 wherein returning the first rigid support substrate to ambient pressure includes supplying an N2 atmosphere at ambient pressure.

8. (Original) The method of claim 1 wherein forming the first rigid support substrate with trenches includes forming a rigid support substrate from a material selected from the group including glass and plastic.

9. (Original) The method of claim 1 wherein forming the first flexible substrate overlying the first rigid support substrate includes forming a flexible substrate from a material selected from the group including plastic and metal films.

10. (Original) The method of claim 1 wherein forming the first rigid support substrate with trenches includes:

forming a rigid support substrate with a top surface;

forming a photoresist pattern with openings exposing the underlying support substrate top surface;

etching the exposed support substrate top surface to form the trenches in the support substrate; and

removing the photoresist.

11. (Previously Presented) A method for mounting a flexible substrate in the fabrication of a liquid crystal display (LCD), the method comprising:



forming a first rigid support substrate;  
introducing a first preformed pattern of spacers, with spacer channels between the spacers, overlying the first rigid support substrate;  
forming a first flexible substrate overlying the first pattern of spacers;  
injecting adhesive into the spacer channels;  
curing the adhesive; and,  
in response to curing the adhesive, attaching the first flexible substrate to the first rigid support substrate.

12. (Previously Presented) The method of claim 11 further comprising:  
subsequent to additional LCD fabrication processes, detaching the first rigid support substrate, spacers, and adhesive from the first flexible substrate.

13. (Original) The method of claim 11 further comprising:  
depositing a plurality of patterned integrated circuit films overlying the first flexible substrate, forming thin film transistors (TFTs);  
forming a liquid crystal (LC) layer overlying the TFTs; and,  
forming a color filter layer over the LC layer.

14. (Previously Presented) The method of claim 13 further comprising:  
forming a second flexible substrate overlying the color filter;

introducing a second preformed pattern of spacers, with spacer channels between the spacers, overlying the second flexible substrate;

forming a second rigid support substrate overlying the second pattern of spacers;

injecting adhesive into the spacer channels;

curing the adhesive; and,

in response to curing the adhesive, attaching the second flexible substrate to the second rigid support substrate.

15. (Original) The method of claim 11 wherein injecting adhesive into the spacer channels includes injecting the adhesive in a vacuum environment.

16. (Previously Presented) The method of claim 15 wherein introducing a first preformed pattern of spacers, with spacer channels between the spacers includes introducing spacer channels with at least one mouth; and

wherein injecting adhesive into spacer channels includes:

creating a vacuum environment in the spacer channels;

supplying adhesive to the at least one spacer channel mouth;

returning the first rigid support substrate to ambient pressure; and

in response to returning the first rigid support substrate to ambient pressure, pulling the adhesive into the spacer channels vacuum environment through the at least one mouth.

17. (Original) The method of claim 16 wherein returning the first rigid support substrate to ambient pressure includes supplying an N2 atmosphere at ambient pressure.

18. (Previously Presented) The method of claim 11 wherein forming the first rigid support substrate includes forming a rigid support substrate from a material selected from the group including glass and plastic.

19. (Original) The method of claim 11 wherein forming the first flexible substrate overlying the pattern of spacers includes forming the first flexible substrate from a material selected from the group including plastic and metal films.

20. (Withdrawn) A structure to support a flexible substrate liquid crystal display (LCD) during fabrication, the structure comprising:  
a first rigid temporary support substrate with trenches;  
a first flexible substrate overlying the temporary support substrate; and  
vacuum injected adhesive in the trenches to attach the first temporary rigid support substrate to the first flexible support substrate.

21. (Withdrawn) The structure of claim 20 further comprising:  
integrated circuit (IC) films, formed into thin film transistors (TFTs), overlying the first flexible substrate.

22. (Withdrawn)The structure of claim 21 further comprising:

- a liquid crystal (LC) layer overlying the TFTs;
- a color filter overlying the LC layer.

23. (Withdrawn)The structure of claim 22 further comprising:

- a second flexible substrate overlying the color filter;
- a second rigid temporary support substrate with trenches overlying the second flexible substrate; and,
- vacuum injected adhesive in the second temporary support substrate trenches to attach the second temporary rigid support structure to the second flexible support structure.

24. (Withdrawn)The structure of claim 20 wherein the first temporary support substrate is made from a material selected from the group including glass and plastic.

25. (Withdrawn)The structure of claim 20 wherein the first flexible substrate is made from a material selected from the group including plastic and metal films.

26. (Withdrawn)A structure to support a flexible substrate liquid crystal display (LCD) during fabrication, the structure comprising:

- a first rigid temporary support substrate;
- a first temporary pattern of spacers, with spacer channels between the spacers, overlying the first temporary support substrate;

a first flexible substrate overlying the first temporary pattern of spacers; and

vacuum injected adhesive in the spacer channels to attach the first temporary support substrate to the first flexible substrate.

27. (Withdrawn)The structure of claim 26 further comprising:

integrated circuit (IC) films, formed into thin film transistors (TFTs), overlying the first flexible substrate.

28. (Withdrawn)The structure of claim 27 further comprising:

a liquid crystal (LC) layer overlying the TFTs; and,  
a color filter overlying the LC layer.

29. (Withdrawn)The method of claim 28 further comprising:

a second flexible substrate overlying the color filter;  
a second temporary pattern of spacers, with spacer channels between the spacers, overlying the second flexible substrate;  
a second rigid temporary support substrate overlying the second temporary pattern of spacers; and,  
vacuum injected adhesive in the spacer channels to attach the second temporary support substrate to the second flexible substrate.

30. (Withdrawn)The structure of claim 26 wherein the first temporary support substrate is made from a material selected from the group including glass and plastic.

31. (Withdrawn)The structure of claim 26 wherein the first flexible substrate is made from a material selected from the group including plastic and metal films.

## **EVIDENCE APPENDIX**

**ATTACHMENT A**



## **ATTACHMENT B**

**ATTACHMENT C**

**ATTACHMENT D**

**ATTACHMENT E**

**ATTACHMENT F**

## **ATTACHMENT G**

Application of Casey  
370 F.2d 576  
Cust. & Pat. App., 1967.  
Jan. 12, 1967. (Approx. 3 pages)

ApplicationOfCasey

152 U.S.P.Q. 235

United States Court of Customs and Patent Appeals.  
In the Matter of the Application of James H. CASEY.  
Patent Appeal No. 7718.  
Jan. 12, 1967.

Proceeding on patent application. The Patent Office, Serial No. 10,239, affirmed rejection of claims, and applicant appealed. The Court of Customs and Patent Appeals, Almond, J., held that claims 1 through 6 of application for patent on brush tape dispenser were unpatentable for lack of unobvious difference between apparatus and existing machine, despite claimed difference in use of machines.  
Affirmed.

\*\*576 \*938 Charles H. Lauder, St. Paul, Minn., for appellant.  
Joseph Schimmel, Washington, D.C. (S. William Cochran, Washington, D.C., of counsel), for Commissioner of Patent.

Before WORLEY, Chief Judge, RICH, SMITH, and ALMOND, Judges, and Judge WILLIAM H. KIRKPATRICK. [FN\*]

FN\* Senior District Judge, Eastern District of Pennsylvania, sitting by designation.

\*\*577 ALMOND, Judge.

This is an appeal from the decision of the Patent Office Board of Appeals affirming the rejection of claims 1 through 6 of appellant's application [FN1] entitled 'Brush Fed Tape Dispenser.' Claims 7 and 8 were allowed.

FN1. Serial No. 10,239, filed February 23, 1960.

The claimed invention relates to a machine for dispensing adhesive tape.  
Claim 1 is illustrative:

1. A taping machine comprising a supporting structure, a brush attached to said supporting structure, said brush being formed with projecting bristles which terminate in free ends to collectively define a surface to which adhesive tape will detachably adhere, and means for providing relative motion between said brush and said supporting structure while adhesive tape is adhered to said surface.

\*939 Figures 2 and 3 of appellant's drawings are depicted below:

Image 1 (5.5" x 5.5") Available for Offline Print

The machine comprises a mounting plate 20, a hub 35 rotatably attached thereto carrying a supply roll 34 of tape T, a roller guide 42 rotatably attached \*\*578 to the mounting plate 20, a brush 24 rotatably attached to said mounting plate for rotation counterclockwise in response to propulsion from motor 21, and a knife 50 mounted on a pivoted arm 52 operated by solenoid 54. Tape T is threaded around roller guide 42 and the adhesive side of the tape is then adhered to the surface

Application of Casey

formed by the free ends of bristles 25 of brush 24. Operation of motor 21 will cause tape T to be pulled from supply roll 34 and moved through the machine by reason of its adhesion to brush 24. Operation of solenoid 54 brings knife 50 in contact with tape T to sever same while it is adhered to the ends of the bristles of the brush. The references are:

Kienzle 2,142,728 January 3, 1939  
Hackett 2,763,481 September 18, 1956  
Engberg Re 22,945 December 2, 1947

\*940 Kienzle shows a device for perforating various types of sheet materials by use of needle-like pins. Kienzle states:  
\* \* \* these pins can form a single group or a plurality of groups arranged side by side or behind one another, or also in staggered positions and they can be operated so as to move simultaneously, or they can be timed differently. For supporting the sheet to be perforated I use a carrier which is \* \* \* an open structure \* \* \* to let the pins enter freely when they penetrate the sheet farther than its thickness. \* \*  
\* (The) carrier \* \* \* may be a drum the surface of which consists of felt, or of a brush \* \* \* which likewise can support the sheet against the action of the pins without offering the said pins any resistance against penetrating.  
Kienzle's sheet is supported by a rotary brush with open end bristles.

Hackett shows a tape dispensing device having a dispensing drum rotatably mounted on supporting means. The drum supports fins to which adhesive tape is adhered. Tape is advanced from a supply through rotational movement of the drum by pneumatic means. The tape is severed by means of a blade.

Engberg discloses apparatus for dispensing adhesive tape by adhering the tape to spaced carriers in the form of transverse blades carried in orbit by an endless belt around two rotary toothed drums. A flat spring guides and presses the adhesive side of the tape against the blades. The belt and adhered tape are advanced by operation of a handle. The tape is severed between two tape feeding blades by a cutting blade. In rejecting claim 1 the examiner applied 35 U.S.C. § 103 and held the claim unpatentable over Kienzle. In analyzing claim 1 the examiner pointed out the structural limitations therein and found them all met by Kienzle except the support for the brush which he considered obvious. He stated that:

The remainder of the claim is made up of the preamble and functional language which incorporates therein a specific workpiece (adhesive tape) which is considered to be patentably immaterial.

Again applying 35 U.S.C. § 103, the examiner rejected claims 2 to 6 as unpatentable over Kienzle in view of Hackett. He noted that claims 2-4 differ from claim 1 only in the addition of a severing means and that claims 5 and 6 further add a means to support the tape supply and a guiding means to aid delivery to the feed roll. The examiner pointed to the fact that Kienzle discloses a perforating means which punctures the sheet material supported on the brush bristles, which material passes between the perforating means and the rotatable brush. He also noted that Hackett in his disclosure of a tape dispenser teaches the use of a transverse severing means and held that it would be obvious to one \*\*579 skilled in the art to substitute the Hackett severing \*941 means for the perforator of Kienzle. He further noted that Hackett teaches a material supply roll and presumably includes in his dispenser guiding means as shown in Engberg inasmuch as Hackett mentions the Engberg patent in his disclosure.

In its affirmance of the rejection of claims 1 to 6 the board, noting appellant's argument that the claims require that the reference used be directed to a 'taping machine' and 'tape dispensing machine' as recited in the preambles of said claims, stated:

Such designation in the preamble is not definitive of specific structure or character of mechanism. The claim must stand or fall upon the elements recited therein. While claim 1 continues to note that adhesive tape will adhere to a brush, the structure so indicated differs in no way from that present in Kienzle where a driven brush is shown as supporting a band of material. The structure thus provided has the capabilities recited which is all that is required to satisfy the terms of the claims. \* \* \*

We agree with the solicitor that the real issue of substance in this case is resolvable on the basis of the merits of the rejection of claim 1, all of the



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structural limitations of which were held either to be shown in Kienzle or to be obvious in view thereof.

The essence of appellant's contention resides in the argument that: Both the Examiner and the Board have entirely disregarded the words 'taping machine' and 'tape dispensing machine' as they appear in claims 1 through 6 \* \* \* (and) the language in the claims concerning the adherence of the adhesive tape to the surface formed by the free ends of the bristles of the brush \* \* \*. Appellant asserts that the language relating to the adherence of the tape to the bristles of the brush is a functional expression which must be given weight and that, when taken in conjunction with the preamble words 'taping machine' and 'tape dispensing machine,' the error of the board in disregarding such language becomes manifest.

As to the obviousness of the structure recited in claim 1, we have no doubt that the Kienzle brush is intended to be mounted on a supporting structure accompanied by means of rotation. That portion of the claim which requires that 'projecting bristles \* \* \* terminate in free ends to collectively define a surface' is anticipated by Kienzle.

We are not persuaded that the board 'entirely disregarded' the preamble and functional language as asserted by appellant. The board found that appellant's structure, even in view of the claim language, differed in no way from the disclosure of Kienzle. The board considered that the structure provided by the reference possessed the capabilities requisite to meet the terms of the claims. The rationale of the board clearly deducible from the language employed is that the Kienzle apparatus as it obviously must be constructed would inherently perform all of the functions called for in claim 1, if it were used with adhesive tape as the workpiece.

\*942 Kienzle discloses a brush bristle surface identical to that of appellant. It must follow therefore that, in the language of the claim, the Kienzle surface is one 'to which adhesive tape will detachably adhere.' It also logically follows that in the use of the Kienzle device with adhesive tape, rotation of the brush would ensue 'while adhesive tape is adhered to said surface.' The difference between the teaching of Kienzle and the claim in issue resides in the use of the Kienzle apparatus. If adhesive tape is used as the workpiece, the terms of claim 1 are met. Appellant states:

The fundamental difference between the machine of appellant's invention and the machine shown and described by Kienzle is that appellant's machine is a tape dispenser while the machine of Kienzle is a perforating device.

\*\*580 [1] It seems apparent, therefore, that the position taken by appellant does not involve any unobvious difference between the structure of his apparatus and that of Kienzle, but relates solely to the matter of use of the devices. Appellant augments this position by stating his concept to be 'that the adhesive contained on adhesive tape can be adhered to the ends of the bristles of a brush and the brush can then be moved to dispense the tape from the machine \* \* \*.'

We agree with the view of the solicitor that appellant's concept:

\* \* \* would seem clearly to relate to a method, that is, a method of handling adhesive tape, rather than an apparatus. Presenting adhesive tape to a roll in such a way as to adhere it to the roll and causing movement of the roll 'while adhesive tape is adhered to said surface' are method steps and cannot properly confer patentability on an apparatus claim.

[2] The claims in issue call for an apparatus or machine, viz. a tape dispensing machine. The manner or method in which such machine is to be utilized is not germane to the issue of patentability of the machine itself. This view finds clear support in *In re Otto*, 312 F.2d 937, 50 CCPA 938, 940. This court there stated:

First of all it should be remembered that the claims are directed to a particular device and a method of making that device, not to a method of curling hair wherein this particular device is used. It seems appellants are endeavoring to predicate patentability upon a certain procedure for curling hair using this device and involving a number of steps in the process. This process is irrelevant as is the recitation involving the hair being wound around the core insofar as the determination of whether these particular claims should be allowed or rejected. In *re Lampert et al.*, 245 F.2d 253, 44 CCPA 958; *In re Rishoi et al.*, 197 F.2d 342, 39 CCPA 1004; *In re Mulholland*, 129 F.2d 860, 29 CCPA 1222; *In re Young*, 75 F.2d 996, 22 CCPA 1060. It will be seen that the Lampert case pertains to the impropriety of

Application of Case.

relying on a method concept to distinguish a structural claim over the prior art and Rishoi and the others indicate that inclusion of the material or \*943 article worked upon by a structure being claimed does not impart patentability to the claims.

Appellant cites and relies on *In re Neugebauer*, 330 F.2d 353, 51 CCPA 1138; *In re Attwood*, 354 F.2d 365, 53 CCPA 784; and *In re Van Lint*, 354 F.2d 674, 53 CCPA 844. Our analysis of these cases in light of the decision reached by the board does not persuade us that they support the contention here asserted by appellant. In fact, we think the rationale of *In re Neugebauer*, wherein the preambles of the claims recited 'an electrophotographic material,' supports the decision of the board in the instant case. We consider pertinent here the following statement of the court relative to the weight to be accorded preambles as positive structural limitations:

As to the claim preamble, the court has frequently considered problems related thereto. See, e. g., *Kropa v. Robie et al.*, 187 F.2d 150, 38 CCPA 858, and cases cited therein. We know no general rule for deciding the weight to be given preambles as positive structural limitations. Ellis, for example, states 'Preambles are used primarily to give the field within which the invention has utility. They designate use rather than structure, form or composition.'

In the instant case, we do not consider it to be controlling that the reference does not in haec verba disclose 'electrophotographic material.' The claims as a whole must be analyzed in light of the disclosure to see if the article defined thereby is distinguishable in fact, vis-a-vis in verbis, over the prior art.

In the *Attwood* case, the preamble itself called for a particular structure. The same is not true here. The references in claim 1 to adhesive tape handling do not expressly or impliedly require any particular\*\*581 structure in addition to that of Kienzie.

As to claims 2 to 6, we do not find that they involve any substantial issue of patentability over and above that presented by claim 1. In fact, appellant's brief contains no contention that these claims embrace any patentable feature not recited in claim 1.

Upon consideration of the arguments of counsel and analysis of the authorities cited, we find no reversible error in the decision of the board.

The decision of the board is therefore affirmed.

\*938 Affirmed.

Cust. & Pat.App., 1967.

Application of Casey,

370 F.2d 576, 54 C.C.P.A. 938, 152 U.S.P.Q. 235

END OF DOCUMENT

## **ATTACHMENT H**

Application of Otto  
312 F.2d 937  
Cust. & Pat.App., 1963.  
Feb. 13, 1963. (Approx. 3 pages)

Application of Otto

136 U.S.P.Q. 458

United States Court of Customs and Patent Appeals.  
Application of Carl Louis OTTO, Lanellé Burnham Otto and Joan Briton.  
Patent Appeal No. 6901.  
Feb. 13, 1963.

Proceeding, at Serial No. 512,520, on application for patent for hair curlers. On an appeal from decision of the Patent Office Board of Appeals affirming the Primary Examiner's rejection of the claims in controversy, the Court of Customs and Patent Appeals, Martin, J., held that the claims were properly rejected as unpatentable. Affirmed.

\*\*937 \*938 Clarence M. Fisher, Pennie, Edmonds, Morton, Barrows & Taylor, Washington, D.C. (John T. Roberts, Washington, D.C., of counsel), for appellants. Clarence W. Moore, Washington, D.C. (Joseph F. Nakamura, Washington, D.C., of counsel), for Commissioner of Patents.

Before WORLEY, Chief Judge, and RICH, MARTIN, SMITH, and ALMOND, judges.

MARTIN, Judge.

This is an appeal from the decision of the Patent Office Board of Appeals affirming the Primary Examiner's rejection of claims 1-4 of appellants' application Ser. No. 512,520 filed June 1, 1955 for HAIR CURLERS FOR PERMANENT WAVING AND MANUFACTURE THEREOF.

Claims 1 and 4, illustrative of the appealed claims, read:

'1. As a new article of manufacture, a core member for hair curlers comprising a body of elastically \*\*938 resilient foam material, the hair being wound directly on said body and said body carrying a hair waving lotion in non-liquid form distributed in the pores of the material.

'4. The method of making a core member of the character described for hair curlers which comprises providing a body of elastically resilient foam material, \*939 saturating the body with a hair waving lotion consisting of a water-soluble solution of saponified material and thereafter permitting the saturated body to dry, whereby to produce a body the pores of which are substantially impregnated with a waving solution in non-liquid form adapted to be activated by subsequent wetting of the body.'

The references relied on by the examiner and the board are:

"Picard	1,219,147	Mar.	13, 1917
Banigan et al.	2,295,823	Sept.	15, 1942
Ramsey	2,418,664	Apr.	8, 1947
Moses	2,720,206	Oct.	11, 1955
Connolly	2,761,166	Sept.	4, 1956
Lyons	2,763,885	Sept.	25, 1956
L'oreal (France)	966,988	Mar.	15, 1950"

Appellants' application relates to a core member for hair curlers. The body of the core member is made up of an elastically resilient foam material, e.g. a resinous polyurethane. It can be of any suitable shape, although the drawing shows it as cylindrical. A hair waving lotion, which may be a water-soluble mixture of thioglycolic acid and ammonia, in non-liquid form, is contained in the pores of the foam material. The lotion may be deposited by first saturating the core member with

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the lotion in solution form and thereafter permitting it to dry.

In use, the core member may have the tresses of hair wound on it while the core and hair are both dry. After the dry hair is wound on the dry core and fixed in place by appropriate retaining means, depending on the specific construction of the curler, the curler with the hair wound on it is then thoroughly wetted and manipulated by squeezing or twisting of the core member to force the lotion from the pores of the core member outwardly to saturate the hair wound on the curler.

The Moses patent discloses a hair curler provided with an absorbent pad member in the form of a cylinder of natural sponge, viscose sponge or the like for holding a permanent wave solution to be squeezed out into the hair wound on the curler. Each of the Connolly and Lyons patents relates to a core member of absorbent material provided with a dry dentifrice which is activated for use by contact with a liquid. Picard discloses a similar member impregnated with a dentifrice or antiseptic while Banigan et al. relates to sponges impregnated with numerous materials.

The Ramsey patent and the French patent to L'Oreal each discloses a cream for use in the permanent waving of hair. The cream comprises a base which may include an emulsifiable water-soluble mixture of thioglycolic acid and ammonia.

\*940 The examiner indicated that in the light of the teachings of Lyons, Picard, Connolly and Banigan et al. he did not see 'that invention would be involved in providing the pores of a core, as shown in Moses, with a non-liquid lotion, to be activated by liquid at the time of use.' The examiner further rejected the claims as unpatentable over any of Picard, Lyons and Banigan et al. in view of either Ramsey or L'Oreal taking the \*\*939 position that 'it would not require invention to substitute the dry hair-waving compositions of either secondary reference for the dentifrice of each primary reference.'

The board in affirming the rejection of the appealed claims stated: \$07' \* \* \* We agree that the art used makes it obvious to incorporate in a sponge a material that has an unspecified degree of dryness (including the substantial degree of some of the art) that causes the material to be retained in the sponge and thus makes obvious doing this with hair waving material.'

Appellants urge that the Moses core is not the article of manufacture which appellants claim. They contend that the Moses core is merely a wick inside of a perforated metal hair curler which when compressed will release liquid through the pores of the metal curler. Appellants also urge that the patents of Picard, Connolly and Lyons, which show a water-soluble dentifrice impregnated in a sponge body useful as a toothbrush and the Banigan et al. patent which mentions that artificial sponges may be impregnated with numerous materials 'would not be reasonably expected to teach modifying the Moses curler.' Appellants further contend that the cream lotion of Ramsey and L'Oreal will not work in their invention.

[1] [2] First of all it should be remembered that the claims are directed to a particular device and a method of making that device, not to a method of curling hair wherein this particular device is used. It seems appellants are endeavoring to predicate patentability upon a certain procedure for curling hair using this device and involving a number of steps in the process. This process is irrelevant as is the recitation involving the hair being wound around the core insofar as the determination of whether these particular claims should be allowed or rejected. In re Lampert et al., 245 F.2d 253, 44 CCPA 958; In re Rishoi et al., 197 F.2d 342, 39 CCPA 1004; In re Mulholland, 129 F.2d 860, 29 CCPA 1222; In re Young, 75 F.2d 996, 22 CCPA 1060. It will be seen that the Lampert case pertains to the impropriety of relying on a method concept to distinguish a structural claim over the prior art and Rishoi and the others indicate that inclusion of the material or article worked upon by a structure being claimed does not impart patentability to the claims.

\*941 The particular device claimed is an elastically resilient 'core member for hair curlers \* \* \* carrying a hair waving lotion in non-liquid form distributed in the pores of the material.' It should be noted at this point that no attaching means is recited in the claims.

Moses teaches a pad member which 'is first charged with a curling liquid' to be inserted in a mandrel to be used for hair curling purposes. Picard, Banigan et al., Connolly and Lyons all teach impregnating sponge-like material with various substances for various purposes such as brushing teeth and polishing metalware. Connolly and Lyons teach impregnating a sponge-like material with dry substances to be activated by contact with a liquid. In view of these teachings we believe it

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would be within the skill of the art to apply those disclosures of Connolly and Lyons to Moses' pad. Since appellants' structure claims pertain only to a core or pad member and recite no means for attaching it to the hair, it is apparent that the invention does not distinguish over Moses' pad [FN1] in view of Connolly and Lyons insofar as the concept of impregnating the pores of a sponge-like pad with a dry substance, which pad is to be used in connection with hair curlers. Appellants have never questioned that a hair curling composition, such as the water-soluble saponified thioglycolin-ammonia \*\*940 mentioned in their application, can be provided in dry form. Therefore no issue arises with reference to that matter. However it should be noted that even though the creams of L'Oreal and Ramsey may contain ingredients of appellants' hair curling preparation, being in cream form, it would not be practicable to endeavor to impregnate a hair curling pad with them.

Although the structure claims do not recite any means by which the core member could be attached to the hair and thus the manner of its intended use is of no significance, it might be well to note that the Moses pad impregnated with a dry hair curling substance would be operable with a non-liquid solution. Thus the core could be used by dipping the mandrel containing the pad into water which would activate the hair curling substance in the pad and then the mandrel could be attached to the hair and the liquid would be squeezed from the pad through the perforations in the mandrel into the hair by means of the plunger activity associated with the locking device. There is no significance in the fact that the Moses pad would be moistened differently than appellants' since, as stated, methods are not involved here. For these reasons we affirm the rejection of claims 1, 2 and 3.

\*942 Coming to claim 4, the only aspect of the recited method which requires additional consideration reads:

'\* \* \*, saturating the body with a hair waving lotion \* \* \* and thereafter permitting the saturated body to dry, \* \* \* adapted to be activated by subsequent wetting of the body.'

It does not appear to us that it would be beyond the skill of an ordinary workman in this art who desires to impregnate a foam-like material with a liquid soluble substance to prepare that substance in liquid form then saturate the material with it. Upon the material and the substance becoming dry, the substance obviously would remain in the pores of the material until it is reactivated by being wetted. We feel certain that this procedure takes place every day in the homes in this country where a housewife saturates a sponge with soapy water then permits the sponge to dry and, unless she has rinsed the sponge thoroughly, when she wets the sponge again the water squeezed therefrom will be soapy. For these reasons we affirm the rejection of claim 4.

In view of the foregoing we affirm the decision of the board.

\*938 Affirmed.

FN1. There seems to be no contention on the part of appellants that patentability resides in the substitution of known foamed plastic in lieu of Moses' sponge material and we see none.

Cust. & Pat.App., 1963.

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312 F.2d 937, 50 C.C.P.A. 938, 136 U.S.P.Q. 458

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